

2. *Streptosolen Benthami* (an nov. sp. vel præcedentis var. ?);—ramulis griseo-hirsutulis; foliis ovatis, minus rugosis, læte viridibus, nervis supra impressis, utrinque pilosulis, supra vix scabriusculis, breviter petiolatis; floribus subcymosis, pedicellis calyce vix longioribus; calyce subinflato, late tubuloso, ore valde obliquo, tubo pallide viridi, nervis fuscis lineato, dentibus 5, inæqualibus, ovatis, obtusis, cærulescentibus; corollæ limbi lobis brevibus, emarginatis, lobo antico (in alabastro postico) multo majori, subreflexo.—Nova Granada, v. s. in herb. Hook. (inter Mivir et Naranjas, altit. 7000 ped., Jameson).

I have seen only a single and very meagre specimen of this "small shrub," which has few flowers: the leaves are of the same shape but somewhat smaller than in the foregoing species, much smoother and of a lighter colour; the flower is about the size of that of *S. Jamesoni*; the calyx is however larger, wider, with much broader and more obtuse segments; it increases somewhat in fruit to a length of 6 lines and a diameter of nearly 3 lines, and conceals the capsule, which is about 3 lines long; it has four thick coriaceous valves, is seated upon its stipitate support, and encircled at base by the indivual remains of the corolla.

XX.—Notes on *Montacuta ferruginosa*. By JOSHUA ALDER.

[With a Plate.]

THE interesting little bivalve *Montacuta ferruginosa*, though pretty generally diffused round the British coasts, has seldom been observed in a living state, and no account of the animal has been published, if we except the very imperfect one furnished by myself to Professor E. Forbes for the 'History of British Mollusca.' This, though correct as far as it goes, is by no means a complete description, having been taken under very unfavourable circumstances. I was glad, therefore, to meet with another living example of this species, which seemed less shy in displaying itself than the former one. It was taken from the stomach of a haddock,—a very unpromising locality certainly for meeting with anything in a living state,—but the little creature on being placed in sea-water appeared quite lively, and not visibly the worse for the uncomfortable quarters from which it had been extracted. In a short time it protruded the mantle beyond the shell, extended its large foot, and began to crawl about. The mantle of this species is curious and interesting from its showing a new modification of that part, intermediate between the plain anterior siphonal fold of *Kellia rubra* and the more elaborate form of mantle in *Lepton squamosum*, and thus supplying the desired link to

connect two genera, which had previously been placed in the same family from the characters of the shell, but whose animals, though agreeing in habits, presented a marked difference in their general appearance. The anterior part of the mantle in this species is ample and produced considerably beyond the shell, forming a kind of frill, which becomes gradually smaller and more even as it passes along the base of the shell. The exterior circumference of the mantle, lining the shell, is fringed with very delicate filaments, rather short and blunt, which extend completely round the margin of the valves, with the exception of a small space at the umbones. In these two particulars this species reminds us forcibly of the peculiar characters of *Lepton squamosum*, though they are displayed in a much less degree; and we may also recognise in them a resemblance to the anterior undulated portion of the cloak in the curious genus *Galeomma*, which, though distinctly observable in spirit specimens, I do not recollect to have seen well represented in any published figure. Thus then we trace a beautiful gradation of form in nearly all the genera of this family (*Kelliadæ*), the distinguishing character of whose animals is to be found in the large development of the mantle, especially in its anterior portion. From the largely developed cloak in *Galeomma Turtoni* (if I am right in its character, for I have not seen it alive), we pass to the still more developed and undulated mantle of *Lepton squamosum*: in *Montacuta ferruginosa* the enlargement is chiefly confined to the anterior portion, which is undulated like the latter; in *Kellia rubra* the front of the cloak is still largely extended, but the margins are even and folded into a tubular form; while this part becomes an ample closed siphon in *Kellia suborbicularis*. Taking these characters into consideration, the idea suggested itself, that these genera might possibly agree in receiving the branchial currents anteriorly, as has been observed in the genus *Kellia*. For the purpose of ascertaining this point, I placed my specimen of *Montacuta ferruginosa* several times under the microscope, but without being able to make out anything satisfactory. I have however since ascertained that in *Montacuta bidentata*, a living specimen of which I fortunately procured, the principal ingress current is decidedly anterior, though the water is admitted occasionally through the whole length of the open mantle; the exit, which was less distinctly seen, being by the posterior aperture. In this species a short fringe surrounds the margin of the shell, but during the time I was able to keep it alive, no extension of the mantle was observed in front; though from the capricious manner in which these little animals display themselves, it would be premature to decide upon the absence of this character from a single observation. I had, on a previous occasion, had this species alive without seeing the fringe.

But to return to *Montacuta ferruginosa*. The mantle, which is open throughout the entire front and base of the shell, is closed posteriorly, forming a small excretory orifice, not produced into a siphon. The foot, as might be concluded from the much-elongated anterior portion of the shell, is very large and muscular; there is a slight angle about half-way down in front, beyond which it is rather narrower and tapers to a blunt point: the base is slightly undulating and grooved through its entire length, though it does not appear to spread out into a flat disc like that of *Lepton squamosum*: the hinder portion is abruptly truncated.

After having kept my specimen for some days in sea-water, I found one morning that the bottom of the glass was covered with a minute white dust, which I immediately concluded would be the spawn, and on placing a small portion under the microscope I found that such was the case. I consequently had it removed into a separate glass with a fresh supply of water, in order to observe its development. Though nearly round at first, the ova soon assumed a subtriangular shape, and about the third day, strong cilia were observed on one of the sides, and they began to rotate very quickly. One after another assumed the rotatory state, till nearly the whole were in motion. After rotating for about a day, they apparently burst the envelope, and swam freely about in the water in all directions, by means of their vibratile cilia, and at the same time assumed more or less of a bell-shape; a slender style or thread projecting from the centre of the ciliated base. This organ, which has been observed in the embryos of other species, has been described as a kind of byssus, by which the little creature can fix itself securely to other bodies. This, however, I did not observe to be the case in the present instance. It soon appeared to be absorbed; the animal became gradually elongated, and the cilia were withdrawn into the shell, which then began to appear, but at what time it was actually formed I could not make out, as, from its extreme transparency and similarity of colour to the rest of the animal, it was very difficult of detection. The cilia could be seen vibrating within the shell for some time after the animal became quiescent; a few isolated cilia at one of the extremities, not observed before, being the only ones that remained to perform their functions externally. These produced a partial current without propelling the animal through the water, as at this stage it gave up its natatory habits and took to a quiet life. The internal portion, the parts of which could not be very distinctly made out, appeared to be undergoing a process of development. The mass was continually changing its form, the separate parts being extended alternately in different directions, and a portion, probably the incipient foot, was occasionally pushed beyond the margin of the shell. At this point

of development further observations were unfortunately arrested by the death of the whole colony, in consequence of the water becoming impure, and my situation at a distance from the sea preventing my getting an immediate fresh supply. The whole period that I had kept them was not above five or six days, so that their development had been pretty rapid. After the death of the animals the shells remained at the bottom of the glass. They were of an elliptical form, straight at the upper margin, where they were attached, though the hinge did not appear to be yet formed: the whole, excepting in the elongated form, had very little resemblance to the adult shell.

The process which this embryo undergoes in the course of development is similar to what has been observed in the fresh-water bivalves by some continental naturalists, as well as more recently by Professor Lovén of Stockholm in the young of *Kellia rubra*, but as these are viviparous, the metamorphosis takes place before extrusion. Professor Lovén has, however, traced the same metamorphoses in the young of *Modiola discors* (*marmorata*), commencing about the third day after the deposition of the spawn. In the present instance the process likewise commenced about the same time after extrusion, but from the artificial position in which the animal had been placed, there is a possibility that the birth may have been premature, especially as some species of the family are known to be viviparous.

EXPLANATION OF PLATE VI. B.

Fig. 1. *Montacuta ferruginosa*, magnified.

Fig. 2. Anterior portion of the cloak more highly magnified.

Fig. 3 to 7. Different stages in the development of the embryo.

Fig. 8. Shell in the embryo state.

XXI.—*Characters of several new East Indian and South African Helices, with remarks on some other species of the Genus occurring at the Cape of Good Hope.* By W. H. BENSON, Esq.

1. *Helix Ampulla*, nobis, n. s.

T. imperforata, oblique globoso-ovata, tenuissima, irregulariter plicato-striata, striis antice obsoletioribus, transverse et oblique rugosa, olivacea; anfractibus 3 velociter crescentibus, ultimo inflato, apice convexo-depresso; apertura parum obliqua, rotundato-ovali, intus concolori, peristomate acuto, margine columellari arcuato, tenui, intrante.

Diam. maj. 42 mill., minor 31 mill., axis 30 mill.

Hab. Khoorda Ghat, in montibus Nilghiri dictis, Indiæ Meridionalis.

Teste Jerdon.

The strong horny epidermis occupies nearly as much of the